

Notice of Allowability

Application No.

09/495,150

Examiner

Herng-der Day

Applicant(s)

HEGDE ET AL.

Art Unit

2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment received 6/3/04 and 9/3/04.
2. ☒ The allowed claim(s) is/are 1-3,5 and 8-12.
3. ☒ The drawings filed on 03 June 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☒ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☒ to Paper No./Mail Date 4.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

JEAN R. HOMERE
PRIMARY EXAMINER

DETAILED ACTION

1. This communication is in response to Applicants' Amendment to Office Action dated January 30, 2004, mailed June 1, 2004, received by PTO June 3, 2004, and Applicants' Supplemental Amendment faxed September 3, 2004.

1-1. Claims 1, 8, 11, and 12 have been amended. Claims 4, 7, 13-15, and 17-23 have been cancelled. Claims 1-3, 5, and 8-12 are pending.

1-2. Claims 1-3, 5, and 8-12 have been examined and allowed.

Interview Summary

2. On September 2, 2004, the Examiner telephoned Mr. Jon C. Reali (Reg. No.: 54,391) to discuss potential allowable subject matter. In response to the telephone conversation, Applicants submitted the Supplemental Amendment on September 3, 2004.

Reasons for Allowance

3. The following is an Examiner's statement of reasons for allowance:

3-1. The closest prior art of record discloses:

(1) A hardware/software co-simulation in a VHDL-based Test Bench Approach (Bauer et al., "Hardware/Software Co-Simulation in a VHDL-based Test Bench Approach", June 1997);

(2) A co-verification extension module to permit the user to connect to real external data streams (Hollander, U.S. Patent 6,182,258).

3-2. Independent claim 1 is directed at a method of developing an ASIC as shown in Figure 1. This independent claim identifies the distinct combination of features of “developing a hardware model including a CPU bus functional model, and a software loaded on a CPU server concurrently” and “communicating command and control information between the CPU server and the CPU bus functional model over a network according to an XBUS protocol modified to exchange data for all modules using the XBUS protocol by sharing a plurality of registers and without using a physical bus” as described in the third paragraph, page 11 of the specification and argued at page 7 of the Supplemental Amendment faxed September 3, 2004. The closest prior art does not teach or reasonably suggest using the modified XBUS protocol for co-simulation in developing an ASIC. Claim 1 and its dependent claims 2, 3, and 5 are deemed allowable.

3-3. Independent claim 8 is directed at a method of co-simulating a hardware model and a software in ASIC development as shown in Figure 5. This independent claim identifies the distinct combination of features of “Requesting, by a hardware side including a hardware model and a CPU bus functional model, access to a software side including a software loaded on CPU server over a network according to a modified XBUS protocol to exchange data for all modules using the XBUS protocol by sharing a plurality of registers and without using a physical bus” and “sending an access request from the CPU bus functional model to the CPU server over the network according to the modified XBUS protocol” as described in the third paragraph, page 11 of the specification and argued at page 7 of the Supplemental Amendment faxed September 3, 2004. The closest prior art does not teach or reasonably suggest using the modified XBUS

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protocol for co-simulation a hardware model and a software in ASIC development. Claim 8 and its dependent claims 9-11 are deemed allowable.

3-4. Independent claim 12 is directed at an apparatus for hardware model and software co-simulation in ASIC development as shown in Figure 1. This independent apparatus claim has the equivalent limitations as the method claim 1. The closest prior art does not teach or reasonably suggest using the modified XBUS protocol for co-simulation in ASIC development. Claim 12 is deemed allowable.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

5. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Herng-der Day whose telephone number is (703) 305-5269. The Examiner can normally be reached on 9:00 - 17:30.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Jean Homere can be reached on (703) 308-6647. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Herng-der Day *H.D.*
September 3, 2004

J. Homere
JEAN R. HOMERE
PRIMARY EXAMINER